

## ***SECTION V***

### ***The Effect of Using Post-Censal Poverty Estimates on Distressed Status during the 1990s***

The Census Bureau SAIPE program has produced county-level poverty estimates for 1989, 1993 and 1995, giving ARC the option of using more recent poverty data to classify counties. The post-censal SAIPE produced by the Census Bureau may more accurately reflect current poverty rates in Appalachian counties. However, the use of post-censal estimates of poverty with relatively large standard errors must be weighed against use of the outdated but more precise census-based estimates of poverty.

In the following section we determine the distressed status of Appalachian counties in 1990, 1994, and 1996 using the poverty levels (for calendar year 1989) measured by the 1990 census. We then substitute the 1993 and 1995 SAIPE for the 1990 census poverty estimate in the distressed county determination, thus determining distressed status according to the SAIPE for fiscal years 1994 and 1996. In this manner, the number of counties that have been affected by economic change in the 1990s can be better evaluated and joint changes in unemployment, income, and/or poverty can be distinguished from changes in poverty alone.

Further, using the SAIPE we calculate two sets of distressed status for each year, the first incorporating the actual SAIP point estimate (which will be referred to as the estimate or the point estimate) and the second incorporating the 95 percent confidence interval upper bound SAIP estimate (which will be referred to as the upper bound or UB in the tables). Using the upper bound SAIP estimate enables us to evaluate the statistical significance of distressed status changes that are due to changes in the poverty indicator. This constitutes a more conservative approach to incorporating the SAIPE into the distressed county designation, since only counties whose poverty is below the distressed threshold to a statistically significant degree are designated non-distressed. As such, we do not incorporate the SAIPE lower bound estimates into the distressed status designation, since the lowest poverty rate within a 95 percent confidence limit does not hold the same consequences of unjustifiably removing counties from the distressed designation.

### ***Distressed Status by State, 1990 to 1994***

Using the 1993 SAIP estimates, between 1990 and 1994 the number of distressed counties in Appalachia declined sharply by 38 percent from 105 in 1990 to only 65 in 1994 (Table 5.1). Kentucky and Mississippi accounted for nearly one half (9 and 10 counties respectively) of the decline in the number of distressed counties. This represented a 24 percent decline in the number of distressed counties in Kentucky but a 77 percent decline for Mississippi. Seven fewer West Virginia counties (26 percent) were distressed in 1994, as were six fewer Alabama counties (86 percent).

**Table 5.1:**  
**Distressed Counties by State, 1990 and 1994**

	ARC		1994 SAIPE			1994 SAIPE Upper Bound		
State	Counties	1990	Distressed	Change	% Change	Distressed	Change	% Change
Alabama	35	7	1	-6	-86	1	-6	-86
Georgia	35	0	0	0	0	0	0	0
Kentucky	49	37	28	-9	-24	36	-1	-3
Maryland	3	0	0	0	0	0	0	0
Mississippi	21	13	3	-10	-77	8	-5	-38
New York	14	0	0	0	0	0	0	0
North Carolina	29	2	1	-1	-50	2	0	0
Ohio	29	7	4	-3	-43	5	-2	-29
Pennsylvania	52	0	0	0	0	0	0	0
South Carolina	6	0	0	0	0	0	0	0
Tennessee	50	9	6	-3	-33	8	-1	-11
Virginia	21	3	2	-1	-33	3	0	0
West Virginia	55	27	20	-7	-26	23	-4	-15
<b>TOTAL</b>	<b>399</b>	<b>105</b>	<b>65</b>	<b>-40</b>	<b>-38</b>	<b>86</b>	<b>-19</b>	<b>-18</b>

Substituting the upper bound of the SAIPE, the decline in the number of distressed counties is reduced by one half with 86 distressed counties as opposed to 65. Kentucky is most affected by this substitution, with a decrease of only one county, as opposed to nine using the estimate. The number of distressed counties in Mississippi also declines by only five, as opposed to 10 using the estimate. The number of distressed counties in West Virginia was also affected by the use of the upper bound SAIPE with a decrease of only 4. Alabama, the state that experienced the largest percentage decline in the number of distressed counties, lost the same number of distressed counties regardless of whether the point or upper bound estimate was used.

### ***Distressed Status by State, 1990 to 1996***

Using the point estimates to calculate distressed status in 1996 results in a 12 percent increase in the number of distressed counties after 1994. The number of distressed counties increased from 65 in 1994 to 73 in 1996, although the number remained 32 percent lower than in 1990 (Table 5.2). Between 1994 and 1996, the number of distressed counties in Kentucky and Mississippi increased by three and four respectively, yet remained substantially below the number of distressed counties in each of those states in 1990. Among Appalachian states, only Ohio lost distressed counties during both time periods, with a decrease of three counties between 1990 and 1994 and a decrease of two counties between 1994 and 1996, a cumulative 71 percent decline.

**Table 5.2:**  
**Distressed Counties by State, 1990 and 1996**

	ARC		1996 SAIPE			1996 SAIPE Upper Bound		
State	Counties	1990	Distressed	Change	% Change	Distressed	Change	% Change
Alabama	35	7	1	-6	-86	1	-6	-86
Georgia	35	0	0	0	0	0	0	0
Kentucky	49	37	31	-6	-16	39	2	5
Maryland	3	0	0	0	0	0	0	0
Mississippi	21	13	7	-6	-46	8	-5	-38
New York	14	0	0	0	0	0	0	0
North Carolina	29	2	1	-1	-50	2	0	0
Ohio	29	7	2	-5	-71	6	-1	-14
Pennsylvania	52	0	0	0	0	0	0	0
South Carolina	6	0	0	0	0	0	0	0
Tennessee	50	9	8	-1	-11	11	2	22
Virginia	21	3	3	0	0	4	1	33
West Virginia	55	27	20	-7	-26	25	-2	-7
<b>TOTAL</b>	<b>399</b>	<b>105</b>	<b>73</b>	<b>-32</b>	<b>-30</b>	<b>96</b>	<b>-9</b>	<b>-9</b>

Using the upper bound SAIPE in 1996 alters the pattern of change with a decrease of only nine counties to 96. The number of distressed counties in Kentucky increases by two, to 39, as does the number of distressed counties in Tennessee, while Virginia increases by one. The number of distressed counties using the upper bound in Alabama and Mississippi remains the same as in 1994 with a loss of six and five respectively compared to 1990.

### ***Causes of Distressed Status Transition, 1990 to 1994***

The dramatic decline in the number of distressed counties during the early part of the decade (1990 to 1994) was due more to overall economic improvement in Appalachia relative to the U.S. as a whole than by substitution of the SAIPE for the 1990 census poverty estimates (Table 5.3). Moreover, relative shifts in unemployment played a more important role as an independent cause of these transitions out of distressed status than did shifts in poverty. Of the 42 counties that transitioned from distressed to non-distressed status between 1990 and 1994, 12 did so as a result of change in unemployment alone while an additional eight did so as a result of changes in both unemployment and poverty. Another two counties moved from distressed to non-distressed

**Table 5.3:**  
**Distressed Status Changes by Cause of Change**

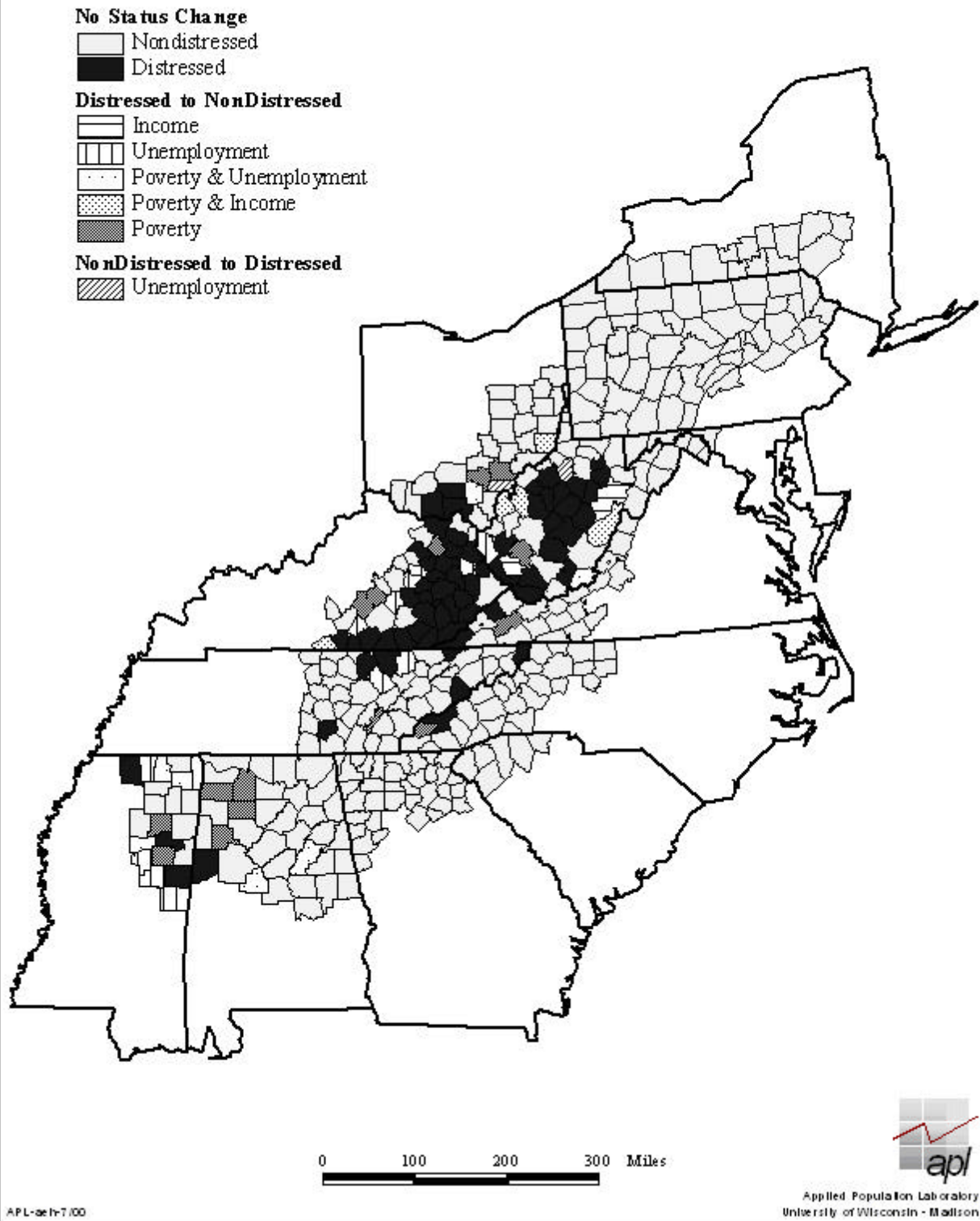
	<b>90-94</b>		<b>90-96</b>		<b>94-96</b>	
	<b>Estimate</b>	<b>UB</b>	<b>Estimate</b>	<b>UB</b>	<b>Estimate</b>	<b>UB</b>
<b>No Status Change</b>	<b>355</b>	<b>368</b>	<b>359</b>	<b>368</b>	<b>385</b>	<b>385</b>
Non-Distressed	292	288	290	283	323	301
Distressed	63	80	69	85	62	84
<b>Distressed to Non-distressed</b>	<b>42</b>	<b>25</b>	<b>36</b>	<b>21</b>	<b>3</b>	<b>3</b>
Unemployment	12	9	6	7	1	0
Income	2	4	1	5	2	1
Unemployment and Income	0	1	0	4	0	0
Poverty and Unemployment	8	2	5	1	0	0
Poverty and Income	5	2	3	0	0	0
Poverty, Unemployment, and Inc.	5	4	6	2	0	0
Poverty	10	3	15	2	0	2
<b>Non-distressed to Distressed</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>10</b>	<b>11</b>	<b>11</b>
Unemployment	2	2	3	4	9	6
Income	0	0	1	1	2	2
Poverty and Income	0	0	0	0	0	1
Poverty	0	4	0	5	0	2

as a result of change in per capita income, while five counties did so as a result of change in both poverty and income. Combined changes in unemployment, income, and poverty resulted in five counties leaving distressed status. Changes in poverty in combination with changes in unemployment or income or both accounted for 2/3<sup>rds</sup> (28 counties) of the transition from distressed to non-distressed status between 1990 and 1994. Less than 1/4<sup>th</sup> of the total transitions (10) can be solely attributed to the substitution of the SAIP estimate. Two counties moved into the distressed category as a result of change in unemployment.

Substituting the upper bound SAIPE further reduces the influence of changes in poverty on distressed status, with only three counties moving to non-distressed status solely due to poverty and 11 doing so as a result of changes in poverty combined with changes in one or both of the other indicators. Using the upper bound, four counties become distressed between 1990 and 1994.

Counties that were designated as distressed in both 1990 and 1994 were largely clustered in eastern Kentucky and in central West Virginia. With regard to the causes of transitions from distressed status to non-distressed, no clear cut geographic patterns emerge. That said, eight of the 12 counties in which change in unemployment alone caused a status change, were located on the perimeter or just inside the eastern Kentucky distressed cluster (Figure 5.1). The remaining four counties were located in Mississippi, three contiguous and one on the northern border. Between 1990 and 1994 the five counties that transitioned from distressed to non-distressed due to changes in poverty and unemployment combined were located in three states, but were all situated along those state's borders. Importantly, the 10 counties where changes in poverty alone accounted for status shifts are located outside the major clusters of distressed counties in Kentucky and West Virginia.

**Figure 5.1:**  
**Change in Distressed Status,**  
**ARC Counties, 1990-1994**



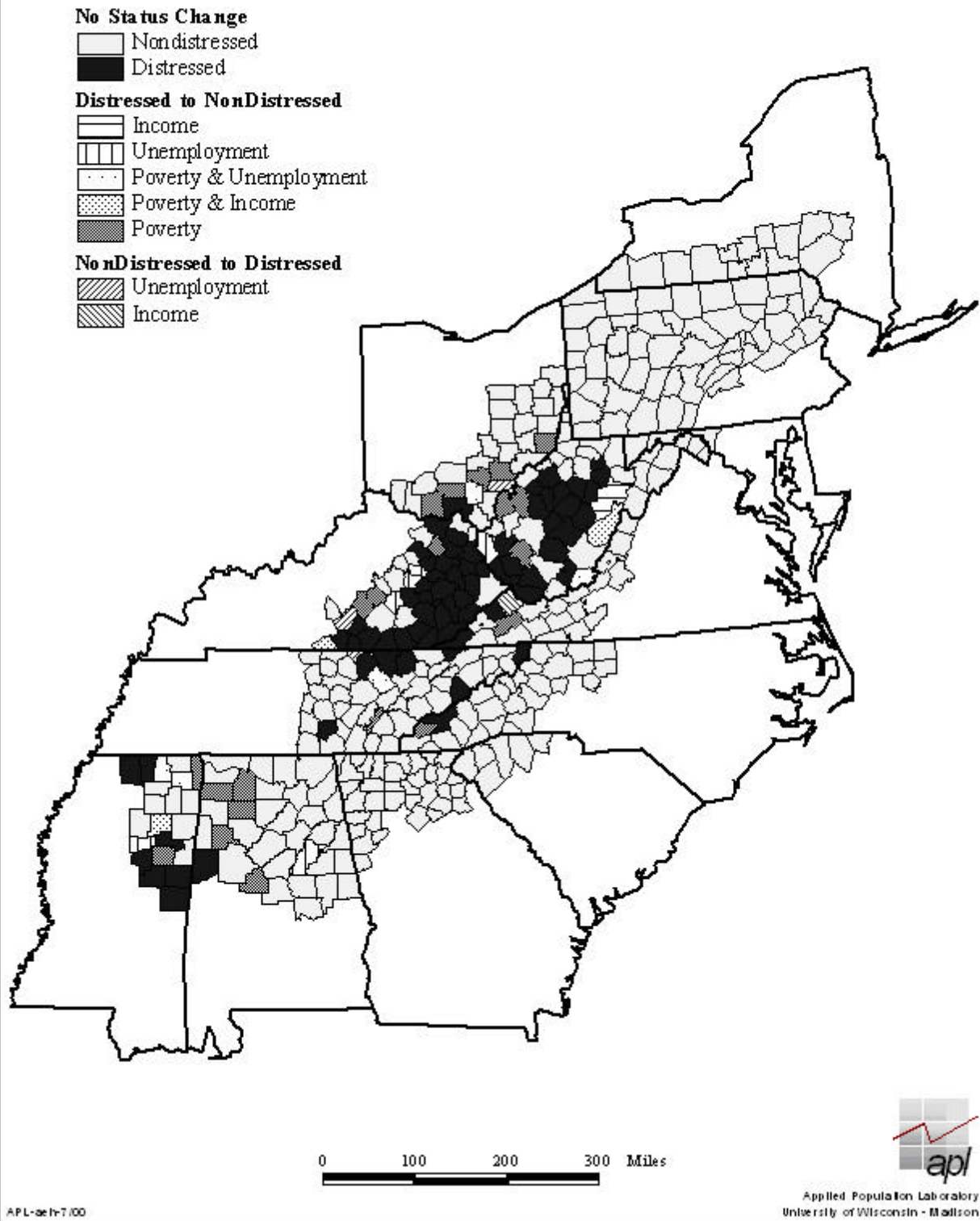
### *Causes of Distressed Status Transition, 1990 to 1996*

Changes in distressed status between 1990 and 1996 follow a pattern similar to the changes occurring between 1990 and 1994, although the independent role of change in unemployment in transitions out of distressed status was markedly diminished, accounting for six of the 36 counties leaving distressed status (Table 5.3). Joint changes in all three of the indicators accounted for six of the transitions out of distressed status, five were due to changes in poverty and unemployment, and six resulted from changes in poverty and income. As a singular factor, change in poverty was responsible for a much larger portion (15 counties or 40 percent) of transitions out of distressed status between 1990 and 1996 than between 1990 and 1994. As a result of changes in unemployment, three counties that were not distressed in 1990 became distressed in 1996. During this interval one county became distressed as a result of income changes.

Compared to using the 1996 SAIPE estimate, the substitution of the 1996 SAIPE upper bound has an even greater effect on designations than it did in 1994. The independent effect of poverty on distressed status is virtually eliminated, accounting for transition out of distressed status for only two counties as opposed to 15. Status changes due to the joint changes of poverty and one or both of the other indicators also diminish considerably. Using the upper bound, only 21 counties overall would move out of distressed status compared to 36 using the SAIP point estimates.

Referring again to point estimate designations, counties that were designated as distressed in both 1990 and 1996 remained clustered in eastern Kentucky and central West Virginia, although Mississippi had more than half of its distressed counties in 1990 remain distressed in 1996 (see Figure 5.2). This was a different pattern than was observed between 1990 and 1994. With regard to the causes of transitions from distressed to non-distressed status, changes in poverty alone accounted for this shift in several counties in southern Ohio as well as a few counties surrounding the eastern Kentucky distressed cluster. Joint changes in poverty, unemployment

**Figure 5.2:**  
**Change in Distressed Status,**  
**ARC Counties, 1990-1996**





and income were responsible for five of the six previously distressed counties in Alabama transitioning to non-distressed status. Otherwise, there did not appear to be any other discernible geographical patterns of causes of county status change.

### ***Causes of Distressed Status Transition, 1994 to 1996***

While the transition from the 1990 census based poverty estimates to the SAIP estimates is important for understanding the implications of changes in poverty for the distressed county designation, comparison of the two SAIPE years is also important (Table 5.3). Not surprisingly, a larger number of counties maintain the same status between 1994 and 1996 (385 compared to 355 between 1990 and 1994 and 359 between 1990 and 1996). Between 1994 and 1996, only three counties transitioned from distressed to non-distressed; one of these was solely a result of improving unemployment and the other two were a result of improving income and poverty. Compared to the transitions from the 1990 census poverty estimates, a large number of counties became distressed during the 1994 to 1996 period. Nearly all of those (9 of 11) were due to increasing unemployment, while one was due to change in per capita market income. None of the status changes in the 1994 to 1996 period were due solely to changes in poverty. However, substituting the upper bound SAIPE, poverty was solely accountable for two counties moving out of distressed status and for two counties moving into distressed status.

### ***Counties Distressed Due to Poverty at 200 Percent of National Average and Above***

Counties with a poverty rate of 200 percent of the national average or higher that meet the criteria for distressed status on one of the other two indicators, unemployment or per capita market income, are designated distressed. These counties, which will be referred to as 200 percent poverty distressed counties, may be disproportionately affected by the substitution of the SAIP estimates for the decennial census poverty rates, due to the higher level of poverty necessary to maintain their distressed status. Although it does not have direct implications for the use of the SAIPE in the distressed designation, in this section we examine 200 percent poverty distressed counties to assess the effect using the SAIPE estimates would have on their status. In 1990, there were 13 such counties, 12 of which were distressed due to meeting the per capita market income criteria, and one due to meeting the unemployment criteria (Table 5.4). In the table, counties distressed on all 3 indicators are designated by PUI, while those distressed on two indicators are designated by P\*U or P\*I.

In 1994, six of these counties (Athens, Ohio; Lincoln, Casey, and Rowan, Kentucky; Oktibbeha, Mississippi, and Boone, West Virginia) transitioned out of distressed status due to changes in poverty indicated by the SAIP estimates. One of these counties would not have been designated distressed in 1994 regardless of the use of SAIP estimates (Monroe, Kentucky) since its per capita market income also exceeded the distressed threshold in 1994. Substituting the 1994 upper bound SAIP estimates preserves the distressed status of three of the counties (Casey, and Rowan, Kentucky; and Oktibbeha, Mississippi).

**Table 5.4:**  
**200 Percent Poverty Distressed Counties, 1990, 1994, and 1996**

County	State	1990	1994		1996	
			Estimate	Upper Bound	Estimate	Upper Bound
Monroe	Kentucky	P* I	P	P	P	P*
Athens	Ohio	P* I	P I	P I	I	P I
Lincoln	Kentucky	P* I	P I	P I	P I	P*U
Casey	Kentucky	P* I	P I	P* I	P I	P*U
Rowan	Kentucky	P* I	P I	P* I	P I	P*U
Oktibbeha	Mississippi	P* I	P I	P* I	P I	P*U
Owsley	Kentucky	P* I	P* I	P* I	P*U	P*U
Whitley	Kentucky	P* I	P* I	P* I	P*U	P*U
Hancock	Tennessee	P* I	P* I	P* I	P*U	P*U
Clinton	Kentucky	P* I	P* I	P* I	PUI	PUI
Cumberland	Kentucky	P* I	P* I	P* I	PUI	PUI
Knox	Kentucky	P* I	P* I	P* I	PUI	PUI
Boone	West Virginia	P*U	PU	P*U	PU	P*U
Leslie	Kentucky	PUI	P* I	P* I	P*U	P*U
Wayne	Kentucky	PUI	P* I	P* I	P*U	P*U
Bell	Kentucky	PUI	P* I	P* I	PUI	PUI
Clay	Kentucky	PUI	P* I	P* I	PUI	PUI
McCreary	Kentucky	PUI	P* I	P* I	PUI	PUI
Noxubee	Mississippi	PUI	P* I	P* I	PUI	PUI
Mingo	West Virginia	PUI	P*U	P*U	PUI	PUI
Jackson	Kentucky	PUI	PUI	PUI	P*U	P*U
Lee	Kentucky	PUI	PUI	PUI	P*U	P*U
Wolfe	Kentucky	PUI	PUI	PUI	P*U	P*U

P = County poverty rate at or above 150% of national average

P\* = County poverty rate at or above 200% of national average

U = County unemployment rate at or above 150% of national average

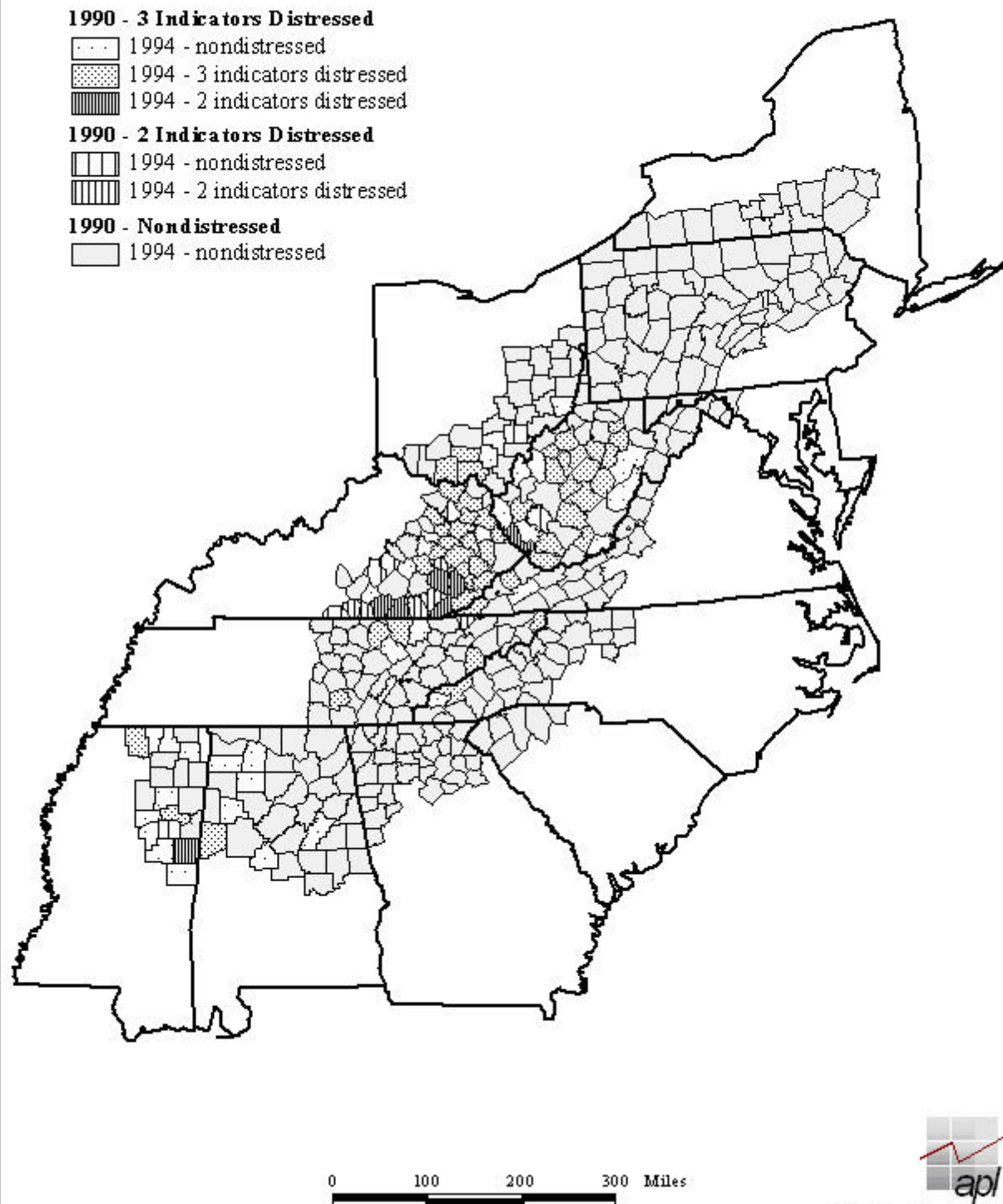
I = County per capita market income at or below 2/3 of national average

With regard to the geographic distribution of the 200 percent poverty distressed counties, during the 1990 to 1994 period, both the stability and transition of this status occurred principally in southern Kentucky, proximate to the Tennessee border (Figure 5.3). Near this border, four counties were categorized as 200 percent poverty distressed in both 1990 and 1994 (dark gray), while another five changed to 200 percent poverty distressed counties (black) during the period. The counties that changed from 200 percent poverty distressed counties to non-distressed (vertical stripes) were scattered throughout the Appalachian region.

In 1990 there were seven counties that met the criteria for distressed status on all three indicators but were distressed by virtue of meeting the distressed criteria on two of the indicators by 1996. Six of these counties, (Leslie, Wayne, Bell, Clay, and McCreary, Kentucky; and Noxubee, Mississippi), experienced changes in unemployment but remained distressed due to a poverty rate of 200 percent of the national average or higher and a per capita market income of 2/3 or less of the national average. The sixth county (Noxubee, Mississippi) experienced changes in income but remained distressed. Since the poverty rates for these counties in the SAIP point estimates were at or above 200 percent of the national average, substituting the upper bound estimates would not affect their status. All six of the counties that were 200 percent poverty distressed counties in 1990 and remained so in 1994, which were all located in Kentucky, were also designated distressed in 1996. However, the indicators responsible for their distressed categorizations changed. Three of the counties (Owsley, Whitley, and Hancock, Kentucky) remained 200 percent poverty distressed categories but in 1990 and 1994 poverty and per capita market income exceeded the distressed threshold while in 1996 unemployment exceeded the threshold and income did not. The other three counties (Clinton, Cumberland, and Knox, Kentucky) became distressed on all three indicators. The seven 1990 200 percent poverty distressed counties that were not designated distressed in 1994, remained non-distressed in 1996 and the poverty rate for Athens County, Ohio fell below 150 percent of the national average. Substituting the upper bound estimates, five of those counties would again remain distressed. However, whereas four of them (Lincoln, Casey, Rowan, and Oktibbeha, Mississippi) were distressed due to their per capita market income levels in 1990 and 1994, they are distressed due to their unemployment rates in 1996. The other county (Boone, West Virginia) would remain distressed due to its poverty and unemployment rates.

As would be expected from the 1990 to 1996 period, many of the 200 percent poverty distressed counties were concentrated in southern Kentucky (Figure 5.4). All three of the counties that moved from two indicator distressed to three indicator distressed between 1990 and 1996 were located in this area. Whereas during the 1990 to 1994 period five counties along the Kentucky/Tennessee border moved from three category distressed to two category distressed in 1996 all but two of those counties reverted to three category distressed. Unlike in 1994, a small cluster of three more northerly Kentucky counties (Jackson, Lee and Wolfe) transitioned from three indicator to two indicator distressed.

**Figure 5.3:**  
**ARC Distressed Counties**  
**By Type and Change, 1990-1994**



**Figure 5.4:**  
**ARC Distressed Counties**  
**By Type and Change, 1990-1996**

